



#14/Pre-Remarks  
7/23/01  
J. Brunsman

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of : ATTN: BOX CPA  
Tatsuhiko SHIBUYA et al. : Docket No. 00774/98-129 TOK/US  
Serial No. 09/302,471 : Group Art Unit 1755  
Filed April 30, 1999 : Examiner D. Brunsman  
SILICA-BASED COATING FILM ON :  
SUBSTRATE AND COATING SOLUTION :  
THEREFOR :

THE COMMISSIONER IS AUTHORIZED  
TO CHARGE ANY DEFICIENCY IN THE  
FEE FOR THIS PAPER TO DEPOSIT  
ACCOUNT NO. 23-0975.

PRELIMINARY REMARKS

Assistant Commissioner for Patents,  
Washington, D.C.

Sir:

In the Advisory Action dated June 4, 2001, it was stated that the previous response, filed May 29, 2001, did not place the application in condition for allowance because the concentration of silane compound, calculated as  $\text{SiO}_2$ , raised a new issue and that no evidence was provided of a material difference in concentration.

In reply, the following remarks will establish the unobviousness of the presently recited low silane concentration of 1-5% by weight as  $\text{SiO}_2$  in the reaction mixture consisting of the silane and an alcoholic solvent, as compared with the disclosure in the Adachi reference.

Since Adachi does not disclose any preferred range of silane concentration in the reaction mixture consisting of the polyalkoxysilane compound and an alcoholic solvent and no such solution was formed in the working Examples in which the hydrolyzable silane, such as tetramethoxysilane, is first mixed with dimethylformamide (DMF) to give a solution which is subsequently mixed with methanol, a tentative calculation was made with respect to Example 1 by utilizing the numerical values of the molecular weights (M.W.) And specific gravities (S.G.) Of the respective materials.

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In Example 1 of Adachi, tetramethoxysilane (M.W. 152) giving 60 g of SiO<sub>2</sub> per mole was first mixed with DMF (M.W. 73; S.G. 0.945) in an equimolar proportion to give a solution which was then mixed with methanol (S.G. 0.793) in a volume equal to that of DMF. Assuming that the amount of the tetramethoxysilane employed was 1 mole (152 g), the volume of 1 mole (73 g) of DMF was 77.2 ml and 77.2 ml of methanol weighs 61.2 g. Accordingly, the weight percentage of the silane compound calculated as SiO<sub>2</sub> relative to the total of the silane and methanol would be  $60/(152+61.2) = 28.1\%$ .

Thus, the claimed silane concentration is much lower than that disclosed in Adachi.

Further, when the silane concentration is too high, the hydrolysis condensation reaction of the silane compound proceeds so actively that the molecular weight of the reaction product could hardly be controlled within a desired range and the hydrolysis reaction of the silane compound in the presence of an alkaline catalyst would not proceed with uniformity.

In view of the foregoing, it is apparent that the prior art cited in the Final Rejection, including Adachi, neither discloses nor suggests the invention as presently claimed.

No further issues remaining, allowance of this application is respectfully requested.

If the Examiner has any comments or proposals for expediting prosecution, please contact undersigned at the telephone number below.

Respectfully submitted,

Tatsuhiko SHIBUYA et al.

By: Matthew Jacob  
Matthew Jacob  
Registration No. 25,154  
Attorney for Applicants

MJ/pjm  
Washington, D.C. 20006-1021  
Telephone (202) 721-8200  
Facsimile (202) 721-8250  
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